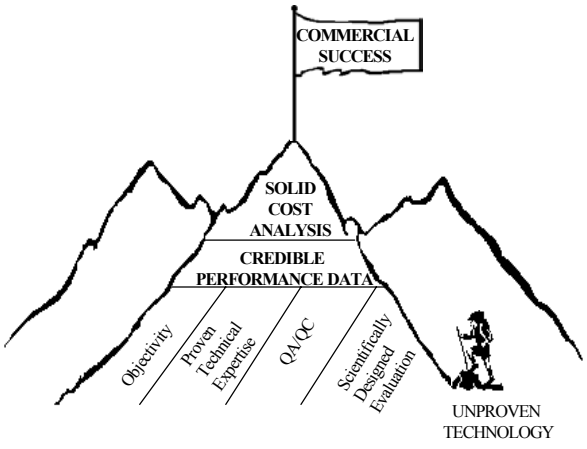
FY 01 Progress and Accomplishments

Over the past 16 years, SITE has earned increased recognition as a leader in advancing innovative technology development and commercialization and has participated cooperatively with more than 145 technology developers. Through FY 01, the SITE Program has successfully demonstrated 137 technologies, 16 of which were demonstrated during FY 01. These demonstrations have provided a tremendous amount of information on the performance, costs, and applicability of innovative cleanup technologies, which greatly assists managers of environmental remediation projects in developing appropriate and effective cleanup solutions. SITE has been responsive to the user community during this time, and has recently focused on the need for in situ remediation technologies to more cost-effectively remediate sites. As shown in Figure 6, 77 completed SITE projects have been ex situ and 60 in situ, with a marked increase in ongoing in situ technology demonstrations as compared with ex situ since 1997. Each of the 12 ongoing or planned demonstrations are in situ.

Field demonstration and evaluation of in situ technologies may require several months or years of data collection. This is in contrast to field demonstrations of ex situ technologies where field work can be completed in 1 to 3 weeks; thus, in situ techniques have higher budget requirements. Based on the SITE Program's increased emphasis on in situ technologies, the number of ongoing demonstrations will likely increase, with fewer moving from ongoing to completed status each year than in the past. EPA estimates that six field demonstrations will be completed each year.

During FY 01, 16 new innovative technologies were evaluated in the field. Completed demonstration projects are listed in Table 1, and ongoing projects are provided in Table 2. All completed and ongoing projects in the Demonstration Program, ETP, and MMT Program are listed in Appendices A and B. The Emerging Technology Program (ETP) was not described in this report because the program was discontinued. ETP continues to be a part of the Program's history, however, and in an effort to capture all projects conducted by the SITE program, ETP projects are listed in the appendices along with all other SITE Program projects.



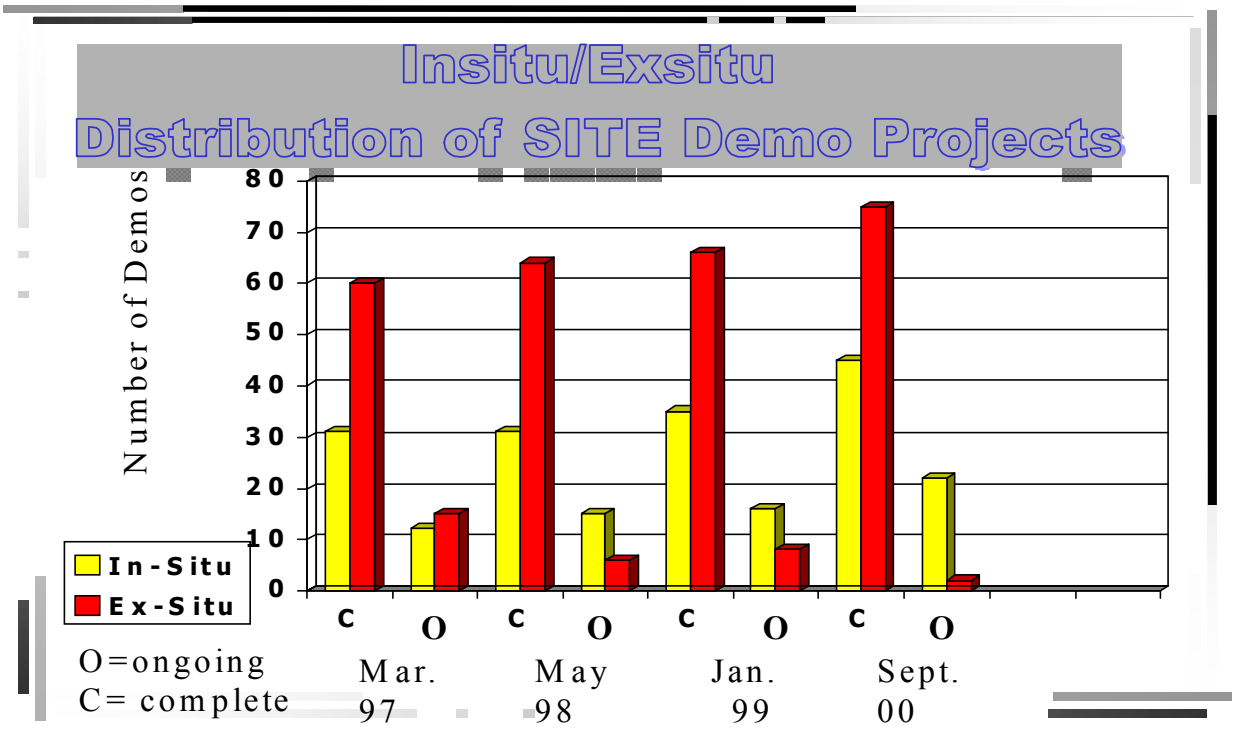


Figure 6. History of Ex Situ vs In Situ Distribution of SITE

Monitoring and Measurement Technologies Program

The MMT Program has leveraged its resources with EPA's Environmental Technology Verification Program. These two programs, known collectively as the Consortium for Site Characterization Technologies, have developed a partnership with the DOE. Resources from the SITE Program are used solely for those technologies addressing hazardous waste. This partnership will help to address the demands on the MMT Program and reduce the backlog of applications submitted by developers of innovative technologies.

To further advance the MMT Program, a stakeholder group was formed to assist in outreach activities and in the selection of technologies. An advocates program involving the EPA Regional offices was also established to assist in the MMT demonstration process and to ensure that the products of the demonstrations address issues relevant to EPA.

Table 1. SITE Demonstration Projects Completed in FY 01			
Developer Location	**Developer**	**Technology**	**Site Location**
SC, WA	E&C Williams, Keeco	This project involved chemical stabilization of mercury mining wastes. Large scale column leaching tests were conducted in cooperation with EPA's Mine Waste Technology Program. Several vendor treatments to stabilize Hg in-situ were evaluated including the use of silicates, sulfides, and phosphates.	Butte, MT*
WI	Minergy	This project involves utilizing a glass furnace to melt dried river sediment contaminated with PCBs. The glass furnace temperature is expected to destroy the organic compounds and to form a glass aggregate product that has beneficial reuse properties.	Fox River, WI
CO	Region 8 and State of Colorado	This project involved multiple innovative passive and semi passive mine drainage technologies. Technologies evaluated included the Aquafix lime despensing water wheel with retention in settling tanks, an oxidation pond, a SAPS system, and a limestone lined channel.	Summitville, CO
OH	U.S. EPA, NRMRL	Alternate Cover Assessment Program (ACAP) - The ACAP is a cooperative partnership of industry, government, and research institutions that will evaluate evapotranspiration and break cover systems. The program is expected to provide cost-effective alternative cover designs, and assist in the development of designs at other sites.	12 sites around the nation
WA	Wilder Construction Co.	MatCon is a modified asphalt system for primary use as an exposed hydraulic containment cover system. When combined with selected aggregates the material can be used as a barrier layer or as a drainage layer. Together, the material can form a multilayer drained cap atop landfills or contaminated soils.	Dover, DE and Elgin, IL

* Column and humidity cell tests on waste from sulphur bank mercury mine located in Clear Lake, CA.

Table 2. SITE Demonstration Ongoing Projects in FY 01			
Developer Location	**Developer**	**Technology**	**Site Location**
IL	Argonne National Laboratory East	This project involves the phytoremediation of radionuclides and solvents. Specifically, trees were utilized to degrade organic contaminants or to draw tritium out of the groundwater flow.	ANL-E Argonne National Lab-East
MI, MS	Army Corps of Engineers	The purpose of the demonstration is to develop and refine a protocol for beneficial reuse of dredged sediment. The process consists of characterization of the site to determine the contaminant concentration spatially and at depth, identifying possible end users of dredged materials, and working with the material until it achieves the appropriate quality for the intended use.	Milwaukee, WI
CA	Geokinetics International, Inc.	Geokinetics has constructed a closed loop lead recovery process to treat contaminated soil from a battery shop. Soil is excavated and stored in storage containers on-site. An electrolyte solution (EDTA) is passed through the soil. The lead/EDTA solution will then be processed using the electrochemical lead recovery system, where the lead will be recovered as lead plate and the EDTA reused.	Pearl Harbor, HI
MA	Harding-Lawson Engineers	In Situ anerobic-aerobic bioremediation of chlorinated solvents. Hydrogen Release Compound (HRC) diffuses into groundwater passing through passive treatment wall. This acts as a base and cometabolite for bioremediation.	Grafton, MA
CA	Integrated Water Resources, Inc.	IWR has designed a steam heating with co-air injection system for the stripping and recovery of TCE and DNAPL. The system will inject steam and air to strip the TCE. The TCE will not condense at the steam front as the plot is heated. The steaming will strip the TCE and the Vapor Recovery wells will collect the steam and TCE for separation and off-site disposal.	Cape Canaveral, FL
TX CA	Micro-Bac International, Inc. X-19 Biological Products, Inc.	This project involves two processes (Micro-Bac and X-19) for the biological treatment of PCB's. Products are mixed with the contaminated soil to promote a reduction in PCB concentrations.	Goldwaithe, TX
CA	Regenesis	In Situ anaerobic-aerobic bioremediation of chlorinated solvents, pesticides, and other contaminants. Hydrogen Release Compound (HRC) diffuses into groundwater passing through passive treatment wall. This acts as a base and cometabolite for bioremediation.	Rocky Mountain Arsenal, CO
CA	Steam Tech Environmental Services	This project utilizes steam-enhanced remediation, which is an in situ thermal treatment soil cleanup technology. The technology involves installation of a steam injection system and an aggressive vapor and liquid extraction system for the reduction of organic contaminants.	Ridgefield, WA

Table 2. SITE Demonstration Ongoing Projects in FY 01 (continued)			
Developer Location	**Developer**	**Technology**	**Site Location**
CA	Steam Tech Environmental Services	This project will extend the highly successful steam injection remediation technology to fractured rock media. The demonstration is aimed at the recovery of chlorinated solvents and to provide additional information regarding remediating other fractured rock aquifers.	Caribou, ME
MA	Terra Therm LLC	This in situ technology utilizes conductive heating from heater wells to volatilize organic contaminants in the soil. The contaminants are then removed with heater/vacuum wells.	Rocky Mountain Arsenal, CO
CT	University of Connecticut	This project involves the evaluation of the DUOX (Dual Oxidation) technology for remediating chlorinated organics. The DUOX technology utilizes two different chemical oxidants (potassium permanganate and sodium persulfate) injected into the subsurface for the oxidation of the chlorinated solvent contaminants.	Vernon, CT
CA	Weiss Associates	The Electrochemical Geoxidation (ECGO) process employs electrode pairs inserted into contaminated soils and/or sediments. A low voltage, low amperage coupled AC/DC current is applied to create an induced polarization field. Redox reactions mineralize organic contaminants and metals are deposited at the electrodes.	Bellingham, WA